

What is claimed is:

1. A method of distinguishing an audio-video signal originating from a local device from a broadcast signal, the method comprising:

classifying a video component of the audio-video signal by at least one of analyzing a histogram of pixel data, analyzing a quality factor, or attempting to detect embedded data in the video component;

classifying an audio component of the audio-video signal by at least one of attempting to detect embedded audio data or analyzing waveform energy associated with the audio component; and

determining a source of the audio-video signal based on at least one of the video classification or the audio classification.
2. A method as defined in claim 1, wherein at least one of the video component and the audio component are digitized before being classified.
3. A method as defined in claim 1, wherein the histogram is calculated by dividing a portion of a video frame into a plurality of blocks.
4. A method as defined in claim 3, wherein the plurality of blocks cover the portion of the video frame.
5. A method as defined in claim 3, wherein the portion of the video frame comprises at least one of an entire video frame, a corner of the video frame, a center

of the video frame, or a band across the video frame.

6. A method as defined in claim 5, wherein different grading values are associated with different portions of the video frame.

7. A method as defined in claim 1, wherein analyzing the histogram comprises at least one of: (a) comparing the histogram to a database of histograms, (b) determining a distribution of pixel data, (c) comparing the histogram values to a predetermined value, or (d) comparing the histogram to a histogram of a prior video frame.

8. A method as defined in claim 1, wherein the quality factor comprises a measurement of at least one of blur, blockiness, or jitter.

9. A method as defined in claim 1, wherein attempting to detect embedded data comprises analyzing a vertical blanking interval for embedded video data.

10. A method as defined in claim 9, wherein the embedded video data comprises at least one of closed captioning data, interactive television triggers, or metering data.

11. A method as defined in claim 1, wherein attempting to detect embedded audio data comprises analyzing the audio signal for an audio code.
12. A method as defined in claim 1, further comprising:
classifying the video component of the audio-video signal by at least one of (a) examining image data of a predetermined portion of the video frame, or (b) comparing extracted text characters to a template.
13. A method as defined in claim 12, wherein the image data comprises at least one of a logo or an identifying image.
14. A method as defined in claim 12, wherein the text characters are extracted from the video component by an edge detection process.
15. A method as defined in claim 12, wherein the template comprises a template of known text characters.
16. A method as defined in claim 1, wherein determining the source of the audio-video component comprises combining values associated with the video classification with values associated with the audio classification.
17. A method as defined in claim 16, wherein combining values associated with the video classification with values associated with the audio classification

comprises calculating a sum.

18. A method as defined in claim 1, wherein determining the source of the audio-video signal comprises:

applying weighting values to the video classification and the audio classification;

combining the weighted video classification and the weighted audio classification to create a combined result; and

comparing the combined result to a predetermined threshold.

19. An apparatus for distinguishing an audio-video signal originating from a local device from a broadcast signal, the apparatus comprising:

at least two of:

(a) an active video analyzer to classify a video component of the audio-video signal by at least one of analyzing a histogram of pixel data or analyzing a quality factor;

(b) a vertical blanking interval analyzer to classify the video component of the audio-video signal by attempting to detect embedded video data;

(c) a text extractor to at least one of detect text characters in the video component of the audio-video signal or extract text characters in the video component of the audio-video signal; and

(d) an audio analyzer to classify an audio component of the audio-video signal by at least one of detecting embedded audio data or analyzing an audio waveform's energy; and

a decision module to determine a source of the audio-video signal based on outputs of the at least two of the active video analyzer, the vertical blanking interval analyzer, the text extractor, and the audio analyzer.

20. An apparatus as defined in claim 19, further comprising:
a digitizer configured to convert the audio-video signal into a digital representation; and
a frame buffer configured to store a digital video frame.
21. An apparatus as defined in claim 19, wherein the active video analyzer is configured to:
divide a portion of a video frame into a plurality of blocks; and
apply a grading value to the portion of the video frame;
22. An apparatus as defined in claim 21, wherein the active video analyzer is configured to:
compute a histogram of the values of the plurality of blocks; and
analyze the histogram.
23. An apparatus as defined in claim 19, wherein the active video analyzer is configured to analyze the histogram by at least one of: (a) comparing the histogram to a database of histograms, (b) determining a distribution of pixel data, (c) comparing histogram values to a predetermined value, or (d) comparing the histogram to a

histogram of a prior video frame.

24. An apparatus as defined in claim 19, wherein the active video analyzer is configured to determine the quality factor.

25. An apparatus as defined in claim 19, wherein the vertical blanking interval analyzer is configured to detect at least one of closed captioning data, interactive television triggers, or metering data.

26. An apparatus as defined in claim 19, wherein the active video analyzer is configured to examine a portion of a video frame for a known image.

27. An apparatus as defined in claim 19, wherein the text extractor is configured to compare extracted text characters to known text characters.

28. An apparatus as defined in claim 19, wherein the decision module is configured to:

- assign a weighting value to each received output;
- combine the weighted output values to form a combined value; and
- compare the combined value to a predetermined threshold to determine the source of the signal.

29. A machine readable medium storing instructions structured to cause a machine to:

classify a video component of the audio-video signal by at least one of analyzing a histogram of pixel data, analyzing a quality factor, or attempting to detect embedded data in the video component;

classify an audio component of the audio-video signal by at least one of attempting to detect embedded audio data or analyzing waveform energy associated with the audio component; and

determine a source of the audio-video signal based on at least one of the video classification or the audio classification.

30. A machine readable medium, as defined in claim 29, storing instructions structured to cause the machine to analyze the histogram by at least one of: (a) comparing the histogram to a database of histograms, (b) determining a distribution of pixel data, (c) comparing the histogram values to a predetermined value, or (d) comparing the histogram to a histogram of a prior video frame.

31. A method of verifying audience measurement data comprising:
capturing video frames;
identifying a sequence of states from the captured video frame; and
comparing the sequence of states to known state sequences.

32. A method as defined in claim 31, wherein the video frames comprises video frames generated by a local device.

33. A method as defined in claim 31, further comprising compressing the video frames after the video frames have been captured.

34. A method as defined in claim 31, wherein the video frames are associated with time stamp data as the video frames are captured.

35. A method as defined in claim 31, further comprising extracting on-screen text from the compressed video frames.

36. A method of identifying a source of an audio-video signal comprising:
analyzing a first predetermined characteristic of a video component of the audio-video signal to generate a first indication of the source of the audio-video signal;

analyzing a second predetermined characteristic of an audio component of the audio-video signal to generate a second indication of the source of the audio-video signal; and

determining if the audio-video signal was generated by a local device based on the first and second indications.

37. A method as defined in claim 36, wherein determining if the audio-video signal was generated by the local device based on the first and second indications comprises weighting the first and second indications.

38. A method as defined in claim 36, wherein the first predetermined characteristic comprises at least one of a distribution of pixel values, a measure of a quality factor, a presence of embedded data, a presence of a predetermined image, a measure of a number of scene changes, a measure of a number of blank frames, or a presence of text characters.

39. A method as defined in claim 36, wherein the second predetermined characteristic comprises at least one of a presence of embedded data or waveform energy associated with the audio component.

40. An apparatus to classify an audio-video signal comprising:
a video/audio classifier to identify the audio-video signal as a locally generated signal or a broadcast signal;
a video codec responsive to a determination that the audio-video signal is a locally generated signal to at least one of capturing a video frame or compressing a video frame; and
an optical character recognition engine responsive to the determination that the audio-video signal is a locally generated signal to attempt to extract on-screen text from the video frame captured by the video codec.

41. An apparatus as defined in claim 40 further comprising a collection unit to associate time stamp data to the video frame captured by the video codec.

42. A method of identifying a source of an audio-video signal comprising:
analyzing a first predetermined characteristic of a first component of the audio-video signal to generate a first indication of the source of the audio-video signal;
analyzing a second predetermined characteristic of the first component of the audio-video signal to generate a second indication of the source of the audio-video signal; and
determining if the audio-video signal was generated by a local device based on the first and second indications.

43. A method as defined in claim 42 wherein the first component is an audio component.

44. A method as defined in claim 42 wherein the first component is a video component.

45. A method as defined in claim 42 further comprising analyzing a third predetermined characteristic of a second component of the audio-video signal to generate a third indication of the source of the audio-video signal.

46. A method as defined in claim 45 wherein determining if the audio-video signal was generated by the local device based on the first and second indications comprises determining if the audio-video signal was generated by the

local device based on the first, second and third indications.